

Riparian Forests of the Wild and Scenic Missouri River: Ecology and Management

Prepared for:

Lewistown Field Office, Bureau of Land Management
Lewistown, Montana

By:

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EXECUTIVE SUMMARY

Riparian forests, comprised mostly of plains cottonwood, are the most important terrestrial habitat within the Upper Missouri Wild and Scenic River corridor. Forested riparian areas provide essential habitat for numerous wildlife species, ranging from birds and small mammals to amphibians and invertebrates. Unfortunately, most of these areas are seriously degraded by human-related disturbances and the encroachment of non-native plants. However, the Wild and Scenic portion of the Upper Missouri, although affected by upstream dams, still retains a semi-natural flow regime. Thus, unlike most other large western rivers, the Upper Missouri probably still possesses the natural hydrological processes necessary for successful cottonwood regeneration (Scott et al. 1997).

This study focuses on the critical habitat components of riparian forests in the river corridor and the environmental and cultural factors that influence them. Vegetation composition and woody structural complexity were examined at 154 plots in relation to nonnative plant infestation, livestock impacts, natural disturbance, soil factors, terrace height, and mapped riparian forest types (Hansen 1989). We also surveyed opportunistically for amphibians, reptiles, bats, mussels and rare plants in the river corridor.

Our surveys documented two amphibian species, five reptile species, five bat species, three mussel species and five small mammal species. Four of these species (northern leopard frog, spiny softshell turtle, Townsend's big-eared bat, and black-tailed prairie dog), are considered Montana Animal Species of Concern. Those four and the long-eared myotis are also designated BLM Sensitive.

Nonnative plants, including five species of noxious weeds, strongly dominate the herbaceous layer of most stands. Our analysis found that increased cover of exotic species was correlated with reduced species richness in both the herbaceous and shrub layers. Smooth brome was the most common and abundant species in the

herbaceous layer of most stands. This exotic species, although not considered noxious, can significantly reduce species diversity and alter stand dynamics by limiting woody species regeneration. Current vegetation patterns are dominated by the overwhelming influence of nonnative species and past disturbances.

A browse evaluation indicated that more palatable shrub species have been heavily browsed and some, like red-osier dogwood, have been virtually eliminated. The remaining shrub layer in most stands consists of species like rose and snowberry that reflect the most extreme disturbance state short of complete shrub elimination (Hansen 1989).

Stands were ranked based on three indices: species richness/exotic herb cover, structural diversity, and these two combined. Highly ranked stands will have greater potential for conservation and restoration.

Most of the eastern half of the riparian corridor is free from Russian olive, a woody invasive with the capacity to fundamentally alter the ecosystem function and composition of riparian areas, with considerable negative impact on habitats for many species of birds and probably also bats. The heavy-seeded Russian olive is most likely to invade where there are nearby domestic plantings (Lesica and Miles 1999). Given the isolation of this eastern half and the dominant public ownership, it may be possible to control Russian olive in this stretch. The semi-natural hydrology and absence of Russian olive offer an important but time-limited opportunity to maintain relatively natural cottonwood stands along a large western river, with considerable habitat and human aesthetic benefits. The invasive tree tamarisk occurs downstream and also has major ecological effects in riparian areas. Keeping these invasive species out will require monitoring and quick control.

Much of the high habitat value of riparian forests to birds and bats depends on the composition and structure of the vegetation. We

netted a predominance of female bats indicating preferential use of riparian forests as maternal sites. The decline in woody structural diversity, shrub composition, and native species cover must be reversed for these riparian forests to continue supporting certain groups of birds and bats. Insectivores and cavity users, including some Species of Concern, will likely be especially affected if Russian olive or tamarisk are allowed to infest this area.

While there has been some research on the negative impacts of Russian olive to many species of birds, little has focused on Montana and there has been virtually no research on how other vulnerable wildlife species are likely to be impacted, particularly bats and small mammals. Such research is needed to identify vulnerable species and assess the threat to their long-term sustainability.

While many forested riparian stands along the Wild and Scenic Missouri River corridor are seriously degraded by past human disturbances and nonnative plant invasion, there are still some stands that have considerable native vegetation cover and good structural diversity. The relatively natural hydrology and lack of Russian olive infestation create a unique opportunity to retain many characteristics and values of these important prairie forests. A further opportunity will occur after the next flood large enough to regenerate cottonwood stands. These new stands could be managed for native plants and natural structural diversity. Even though this stretch of the river retains some natural large floods, the size and frequency has diminished and continued coordination among agencies may be necessary to maintain this critical factor in the future.

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Though this report has profited from the support and contributions of many people, any errors rest with the primary author, Greg Kudray.

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